Surface Plasmon Resonance

Surface plasmon resonance (SPR) allows real-time, label-free detection of biomolecular interactions. SPR can be used to monitor the interactions between DNA and proteins, proteins and proteins, drug and proteins, nucleic acids and nucleic acids, antigens and antibodies, receptors and ligands, etc.

SPR has a wide range of applications in the life sciences, medical testing, drug screening, food testing, environmental monitoring, drug testing, and forensic identification.

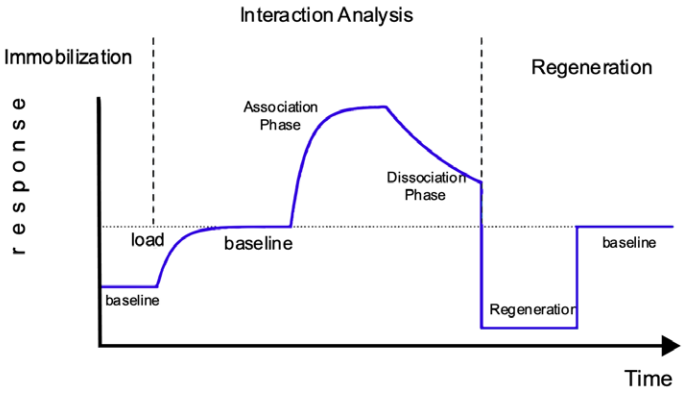

Fig 1. Three main steps in SPR experiments: immobilization, interaction analysis, and regeneration

Researchable Biomolecules

- Protein
- DNA/RNA
- Lipids / Liposomes / Biofilms
- Polysaccharides
- Polypeptides
- Small molecules
- Whole cells / viruses / microbes

Advantages of Surface Plasmon Resonance

- Real-time monitoring
- Label-free detection
- Small sample size
- Reusable sensor chip
- Accurate
- Only method accepted by regulatory authorities (FDA, EMA&ICH)

SPR Key Application Areas

- Protein interaction analysis
  Improve understanding of the nature of molecular interactions and advance research with innovative insights
- Small molecule drug discovery
  Screening and optimization of compounds based on selectivity, affinity and kinetics
- Biotherapeutic drug discovery
- Accurate ranking and selection of biotherapeutics based on whether they bind or not, affinity, and kinetics - from ultra-fast binding rates to ultra-slow dissociation rates
- Bioanalytical applications in drug development and QC
  Better protein characterization through reliable and stable definition and analysis of QCA and drug release parameters

With Surface Plasmon Resonance, You Can Learn About

Binding

The presence or absence of binding

Specificity

Specificity and selectivity of binding

Affinity

The strength of the binding interaction between two molecules

Concentration

Detect the active concentration of the target molecule

Kinetics

The speed of binding and dissociation and the stability of the complex

Mechanism

Participants, co-activators and assembly sequence of functional complex formation

Thermodynamics

Temperature and thermodynamic characteristics of molecular binding

Instrument Platform

The Biacore T200 is a label-free system based on surface plasmon resonance technology to track biomolecular interactions in real time, and can be used in early drug research and development and downstream production quality control.

Demo Results